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Neuroticism and Emotion Regulation Success

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Abstract

Research indicates that individuals high in Neuroticism tend to use ineffective ways of regulating their emotions and have stronger negative reactions to stress than low Neuroticism individuals (Bolger & Zuckerman, 1995) but there has been little research to elucidate the mechanisms responsible for these differences. Emotion regulation deficits and use of specific emotion regulation strategies are potential mechanisms that could account for negative and variable mood in individuals with high Neuroticism. The present study compared both the total number of emotion regulation attempts made and the number of successful emotion regulation attempts across 10-days for individuals high (N = 33) and low (N = 31) in Neuroticism. Results indicated that although there were no significant differences in the total number of emotion regulation attempts made, individuals with high Neuroticism made significantly more unsuccessful emotion regulation attempts and engaged in more maladaptive emotion regulation strategies (e.g., cutting self, smoking) than individuals with low Neuroticism. One potential implication of this research is that individuals with high Neuroticism should be encouraged to use different, as opposed to more, emotion regulation strategies when distressed. Future research should examine the contingencies that maintain maladaptive strategy use in high Neuroticism individuals.

Neuroticism and Emotion Regulation Success

Funder (2007) argued that predicting and understanding behavior are the most important purposes of personality traits. The Big Five (Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness; Funder, 2007) are the most well-studied personality traits for understanding and predicting behavior. Research has shown these basic five factors are found repeatedly even when using different trait lists (Saucier & Goldberg, 1996) and a large range of samples (Saucier & Goldberg, 1996; McCrae & Costa, 1987). It is clear from the literature that the Big Five is deserving of its wide acceptance in personality research and assessment. Further, over the past two decades, researchers have attempted to identify particular Big Five dimensions that predict life outcomes in domains such as physical health, mental health, occupation, and relationships (John, Naumann, & Soto, 2008).

All traits included in the Big Five have been the target of empirical investigations; however, previous work conducted on Neuroticism suggests this trait has particularly strong clinical implications. According to Costa and McCrae (1987), Neuroticism is a broad dimension of individual differences in the tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits. Fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness are some of the traits that are subsumed under Neuroticism. To elucidate this broad domain of Neuroticism, Costa and McCrae (1992) break the trait down into six facets within their personality assessment instrument, the NEO-Personality Inventory - Revised (Costa & McCrae, 1992). The six facets are as follows: Anxiety, Anger-Hostility, Depression, Self-Consciousness, Vulnerability, and Impulsiveness. To

elaborate further, John and colleagues (2008) suggest that Neuroticism is a bipolar trait that contrasts even-temperedness at one extreme with negative emotionality at the other extreme.

A review of the literature indicates that Neuroticism is associated with particular states of affect. To specify, Neuroticism is related to increased psychological distress and decreased happiness and well-being. For example, McCrae and Costa (1991) conducted a study with 429 adults (40% women), ages 24-81, and found Neuroticism to be strongly, negatively correlated with happiness and overall well-being. In a similar vein, Watson and Clark's (1984) found that individuals reporting higher levels of Neuroticism were likely to report being anxious and unhappy as well. In addition to individuals with high Neuroticism having more unpleasant emotional experiences, Neuroticism has also been linked to physiological disturbances. For example, Costa and McCrae (1987) conducted a study in which 347 women completed the Cornell Medical Index (CMI; Brodman, Erdmann, Lorge, & Wolff, 1949) and found Neuroticism to be significantly correlated with greater somatic complaints.

In addition to the strong associations between Neuroticism and the tendency to experience negative affect, there is evidence to suggest that Neuroticism is related to the duration of negative affect. Suls, Green, and Hillis (1998) found that individuals with high Neuroticism scores (obtained from the NEO-PI) demonstrated increased negative affect for longer durations compared to individuals with low Neuroticism scores. Further, Murray, Allen, and Trinder (2002) found that Neuroticism was the sole significant personality predictor of mood variability in a large sample of adults. Specifically, these authors found that Neuroticism was most strongly related to negative affect variability, suggesting individuals with high Neuroticism, many of whom are already experiencing intense negative affect, lack stability and consistency within

these negative mood states. To clarify, Bolger and Zuckerman (1995) investigated Neuroticism and stress in a daily dairy format and found participants in the high-Neuroticism group reported more interpersonal conflict and stronger negative reactions of stress compared to individuals in the low-Neuroticism group. In summary, individuals with high Neuroticism generally experience more frequent and more intense negative emotions, for longer durations, than low Neuroticism individuals. Additionally, individuals with high Neuroticism experience more negative affect variability, suggesting that they have more frequent and intense reactions to daily stressors.

Emotion regulation is a growing area of research within psychology that includes the investigation of strategies to change and manage emotions, the categorization of strategies as adaptive or maladaptive, and how emotion regulation strategies can impact overall mood. Within the research literature, there are various definitions for the construct of emotion regulation including the regulation of emotions themselves as well as how emotions regulate other processes such as behaviors and thoughts (Gross, 1999). Focusing on the regulation of emotions, specifically, Gross (1998) has proposed that emotion regulation is the ability to change the trajectory of an emotional response; including its magnitude, latency, and duration. Gratz and Roemer (2004) have conceptualized emotion regulation as involving the awareness and understanding of emotions, the acceptance of emotions, the ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and the ability to use situationally appropriate emotion regulation strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands.

As evident in the model proposed by Gratz and Roemer (2004), emotion regulation is a multifaceted construct and individuals are likely to use several different strategies to regulate

emotions. For example, expressive suppression, cognitive reappraisal, and rumination have all been studied as emotion regulation strategies. Given the large number of emotion regulation strategies that have been proposed, some research on emotion regulation strategies has focused on categorizing certain strategies as adaptive or maladaptive. This distinction is conceptualized by researchers in a variety of ways. Thompson and colleagues (as cited in Gratz & Roemer, 2004) have suggested that adaptive emotion regulation involves altering the intensity or duration of an emotion rather than changing the discrete emotion that is experienced. In other words, adaptive regulation involves modulating the experience of emotions rather than eliminating certain emotions. This would leave maladaptive emotion regulation strategies as those that do not effectively alter the intensity or duration of an emotion. This distinction emphasizes the immediate impact a strategy has on an emotional experience. However, Auerbach, Abela, and Ho (2007) emphasize the utility and consequences of an emotion regulation strategy when determining its adaptive or maladaptive nature. These authors state that while "some individuals utilize adaptive means to manage negative affective states, other individuals use more maladaptive strategies that may serve to perpetuate the initial disturbance" (Auerbach et al., 2007). This example elucidates the classification of an emotion regulation strategy as maladaptive when the emotion regulation strategy accentuates a pre-existing psychological disturbance, such as avoidance in an individual with Avoidant Personality Disorder or non-suicidal self-injury in an individual with Borderline Personality Disorder. These maladaptive attempts at emotion regulation may lead to serious, long-term, negative consequences and potential impaired functioning. Conversely, strategies considered adaptive are effective (i.e., reduce distress in the present moment), promote healthy functioning (i.e., in the long-run are not related to future distress), and maintain mental health.

Five studies conducted by Gross and John (2003) with samples of undergraduate students elucidate distinctions between adaptive and maladaptive strategies by studying the consequences of cognitive reappraisal and expressive suppression. Gross and John (2003) conducted their studies using the following definitions: *Cognitive reappraisal* is a form of cognitive change that involves construing a potentially emotion-eliciting situation in a way that changes its emotional impact and *expressive suppression* is a form of response modulation that involves inhibiting ongoing behavior to make the experience of emotion not evident to others through facial expressions and other behavioral manifestations of the emotion. These studies used the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), a self-report measure of cognitive reappraisal and expressive suppression usage. A compilation of the results demonstrated that individuals who reported frequent use of reappraisal experienced expressed more positive emotion and less negative emotion than those who reported using reappraisal less frequently. Participants who reported frequent reappraisal also had fewer depressive symptoms and greater self-esteem than those with less frequent reappraisal use. Participants that engaged in more expressive suppression reported experiencing and expressing fewer positive emotions than individuals who used expressive suppression less frequently. In terms of negative affect, individuals high in expressive suppression experienced more negative emotions than participants that used suppression less frequently. To further support Gross and John's (2003) findings, Dennis (2007) conducted a study in which participants completed the ERQ (Gross & John, 2003), the BIS/BAS questionnaire (Carver & White, 1994) which measures behavioral inhibition (akin to heightened anxiety sensitivity and avoidance behavior) and behavioral activation (akin to positive emotionality and approach behavior) sensitivity as types of affective styles, and self-report measures assessing anxiety and depression. Specifically, those low in BAS reported better,

less depressed mood when engaging in more cognitive reappraisal, and those low in BIS reported more anxiety when engaging in more expressive suppression. Dennis' study, by taking individual differences in affective style into account, documented specific associations between emotion regulation strategies and mood in the context of personality. In summary, although the aforementioned data are correlational and cross-sectional, these studies foreshadow a complex relationship that links emotion regulation strategies with personality variables in predicting symptoms of psychopathology.

In addition to expressive suppression investigations, researchers have found that other strategies such as self-blame, rumination, and catastrophizing correlate strongly with higher levels of depressive symptoms (Anderson et al., 1994; Nolen-Hoeksema, 2000; Sullivan, Bishop, & Pivik, 1995) and may be labeled as maladaptive emotion regulation strategies. On the contrary, strategies such as positive reappraisal and acceptance are associated with higher levels of optimism and lower levels of trait anxiety (Carver, Scheier, & Weintraub, 1989) and have been labeled as adaptive emotion regulation strategies.

As previously mentioned, emotion regulation has been described in terms of the successful usage of particular emotion regulation strategies. In contrast, emotion dysregulation is the presence of difficulties in emotion regulation or the inability to change emotional responses in an adaptive manner. For example, there is evidence to suggest that individuals with high Neuroticism experience more negative mood states than those with low Neuroticism in part due to ineffective problem-solving and poor emotion regulation skill use (Bolger & Zuckerman, 1995). In fact, Kokkonen and Pulkkinen (2001) conducted a ten year study with a sample of Finnish adults (89 women and 81 men) that included three waves of data collection. The authors reported that Neuroticism longitudinally predicted emotion regulation deficits via reduced

engagement in emotion regulation strategies. To clarify, participants with higher levels of Neuroticism made fewer attempts to repair emotions in a positive direction and to utilize active regulation to sustain positive affect than individuals with lower levels of Neuroticism. Based on the findings regarding Neuroticism and emotion regulation, it is possible that individuals with high Neuroticism use fewer emotion regulation strategies, use more maladaptive strategies, or use similar emotion regulation strategies with similar frequency but have more instances of negative affect. However, there are currently no known investigations of the use or impact of *specific* emotion regulation strategies on negative affective states in individuals with high and low Neuroticism.

Therefore, the main objective of this study is to examine differences in both the frequency of emotion regulation attempts and particular strategies used by high and low Neuroticism individuals. The hypotheses are as follows:

1. Individuals high in Neuroticism will make fewer attempts to regulate their emotions than their low Neuroticism counterparts.

2. When high Neuroticism individuals do make attempts to regulate their emotions, those attempts will be less effective at decreasing their reported negative emotion.

3. Individuals high in Neuroticism will engage in more maladaptive emotion regulation strategies then low Neuroticism individuals.

4. High Neuroticism participants will score higher on the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) than their low Neuroticism counterparts.

5. High Neuroticism participants will score higher on the Affect Intensity Measure (Larsen, 1984) then their low Neuroticism counterparts.

Method

Participants

Participants were undergraduate students attending The Ohio State University and adults residing in the greater Columbus, Ohio area. The student participants were enrolled in an introductory Psychology course and were recruited through the Research Experience Program. These participants received course credit in exchange for their participation. The members of the community were recruited through a newspaper advertisement printed in several local newspapers (see Appendix I) and received monetary compensation for their participation. A total of 64 people (61 students and 3 community members) participated in this study. The participants in the sample had a mean age of 20.30 (SD = 3.9) and 56.3% of the sample was male. The majority of the participants identified as Caucasian (83%), followed by those who identified as Hispanic American (6%) and African American (5%), and with participants who identified as American Indian, Asian, and Other making up less than 6% of the sample. The majority of participants' annual family income was relatively high with 33% reporting more than $100,000, 25% reporting $65,001-$100,000, 23% reporting $40,001-$65,000, 5% reporting $20,0001-$40,000, and 14% reporting less than $20,000 annual family income. For a more concise view of demographic information, see Table 1. Before being invited to participate, participants were prescreened for high levels of Neuroticism using the Neuroticism sub-scale from the NEO-PI-R (Costa & McCrae, 1992). The NEO-PI-R-N cutoff score for high Neuroticism participants was 107 and above for males and 117 and above for females. The sample's low Neuroticism

subgroup had a mean NEO-PI-R score of 74.97 (*SD* = 15.44) and the high Neuroticism subgroup had a mean NEO-PI-R score of 119.39 (*SD* = 16.13).*Materials*

Participants completed demographic (see Appendix E) and contact forms (see Appendix F), as well as completed questionnaires which were part of a larger data collection effort. The scales used in this study were the NEO Personality Inventory-Revised-Neuroticism Subscale (Costa & McCrae, 1992), Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), and the Affect Intensity Measure (AIM; Larsen, 1984). After completing these self-report measures, participants were trained to answer ecological momentary assessments using a personal digital assistant, i.e. PDA, and were then sent home with the PDA. Relevant information regarding the personal digital assistant and its programming is provided below.

The Affect Intensity Measure (AIM; Larsen, 1984) is designed to measure the intensity with which individuals typically experience positive and negative emotions. The 40-item scale uses a 6-point Likert scale and has shown good test-retest reliabilities of .80 after one month and .81 after 3 months. Flett and Hewitt (1995) reported that the AIM demonstrated strong internal consistency (alpha = .84). See Appendix C.

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item, self-report measure assessing six subscales of emotion regulation abilities including Non-acceptance of Emotional Responses, Difficulties in Engaging in Goal-Directed Behavior, Impulse Control Difficulties, Lack of Emotional Awareness, Limited Access to Emotion Regulation Strategies, and Lack of Emotional Clarity. Gratz and Roemer reported that the total scale demonstrates good internal consistency (alpha = .93) and good construct validity, and the test-retest reliability was .88 over a 4-8 week period. See Appendix B.

The NEO Personality Inventory-Revised, Neuroticism sub-scale (NEO-PI-R-N; Costa & McCrae, 1992) is a subscale of the NEO-PI-R and is designed to assess the Neuroticism domain of the five factor model of personality. The measure is a 48-item, self-report measure, uses a 5-point Likert scale, and has very good internal consistency (alphas ranging from .92 to .93) and test-retest stability (*r*s ranging from .63 to .83). See Appendix A.

Participants completed the ecological momentary assessments (EMAs) using a hand-held PDA, the palm z22, which was programmed using PMAT 2.0. The assessments taken on the PDA consisted of approximately 48 questions (see Appendix H) derived from emotion regulation measures and included mood ratings (although there was not any prompt to which participants responded to all 48 questions). There were 20 questions that were given in response to positive affective experiences and 20 questions that were given in response to negative affective experiences. The questions were designed to provide a brief but comprehensive assessment of the strategies used and moods experienced during the assessment time period. We only included answers generated from negative affective experiences in this study.

Procedure

This study is a between subjects, two group design. Students enrolled in the introductory psychology course were prescreened using the NEO-PI-R-N subscale at the start of each quarter for four quarters. Students with high levels of Neuroticism were invited to participate via email. Community participants recruited for this study were initially prescreened over the phone using a phone script (see Appendix J) adapted from the NEO-PI-R-N subscale to preliminarily assess for high levels of Neuroticism. They were then offered an appointment time to come and complete the full NEO-PI-R-N sub-scale. If their score did not qualify them for the high Neuroticism

group, they were compensated for their time at the rate of $10/hour. However, if their score qualified them for the high Neuroticism group, they were invited to participate in the rest of the study for further compensation.

After prescreening and recruitment had taken place, the questionnaire and training portion of the study was conducted in groups of one to two participants at a time. First, participants were given two copies of the consent form, one that they signed for study records and one that they kept for their records. Next, a description of the procedure was read to participants by the experimenter, and they were given the option to continue with the experiment or stop participation. Participants were told that their participation was voluntary, and that they were permitted to leave or quit the study at any time and still receive credit or monetary compensation.

The participants were asked to complete EMAs using the PDA for 10 days. These assessments took place three times daily, randomly within four hour intervals, for the full ten days. Assessments only occurred between the hours of 9:00 a. m. and 11:00 p. m. Approximately three days after taking the PDA home, a researcher called the participant to check on the participant's use of the PDA and answer any questions. On the ninth day, the participant received a reminder email with instructions about returning the PDA. At the end of ten days, the participant returned the PDA, and the data were extracted. The participants were then fully debriefed on the study purposes and awarded credit or full monetary compensation for their participation.

Results

Hypothesis 1 predicted that participants with high levels of Neuroticism would make fewer attempts to regulate their emotions than the low Neuroticism participants. The number of emotion regulation attempts were totaled for low and high Neuroticism participants and analyzed using independent samples *t*-test. There were no significant differences in the total number of emotion regulation attempts made for high (M = 60.06, SD = 35.49) and low (M = 44.81, SD = 26.82) Neuroticism individuals; t (59.34) = -1.95, p = .06; although, there was a trend in the opposite direction to what had been predicted. These results indicate that although high and low Neuroticism individuals are not statistically different in the average number of attempts they are making to regulate their emotions, there is a trend for individuals with high neuroticism to make more emotion regulation attempts. See Figure 1 for these results

Hypothesis 2 predicted that when participants with high Neuroticism regulated their emotions, the strategies they used would be less effective at changing their reported affect than the participants low in Neuroticism. The number of successful and unsuccessful emotion regulation attempts was analyzed using independent-samples *t*-tests. Individuals with high Neuroticism (M = 31.76, SD = 23.26) made significantly more unsuccessful emotion regulation attempts than low Neuroticism individuals (M = 21.68, SD = 13.10); t (51.054) = -2.15, p = .04. These results show that the participants with high Neuroticism made significantly more unsuccessful emotion regulation attempts that the participants with low Neuroticism. This, however, might be accounted for by the total number of attempts made, which although not significantly different between the two groups, was numerically greater in the high Neuroticism group. A linear regression was used to analyze the relationship between total number of emotion

regulation attempts, number of unsuccessful emotion regulation attempts, and level of Neuroticism. When total emotion regulation attempts was entered in the first step of the analysis, it accounted for a significant portion of the variance in unsuccessful emotion regulation attempts; F (1, 62) = 48.32, $p < .001$. However, when Neuroticism was added to the linear regression model, it did not significantly account for an additional portion of the variance in unsuccessful emotion regulation attempts; $F\Delta$ (1, 61) = 1.48, p = .23, $R^2\Delta = .01$. Overall, the model was still significant, but Neuroticism did not make a significant contribution to number of unsuccessful emotion regulation attempts over and above the variance accounted for by total number of emotion regulation attempts. See Figure 2 for these results.

Hypothesis 3 predicted that high Neuroticism participants would use more maladaptive emotion regulation strategies than their low Neuroticism counterparts. There were seven emotion regulation strategies out of the total twenty strategies analyzed in this study that were classified as maladaptive a priori. The total following strategies were classified as maladaptive: rumination ("I thought over and over again about the situation and my feelings"), contextualizing ("I thought about all the other things that have happened to me in addition to this"), substance use ("I smoked a cigarette/ drank alcohol/ got high"), expressive suppression ("I controlled my emotions by not showing them "), emotional suppression ("I ignored my feelings"), denial ("I just acted like the situation had never happened at all"), and non-suicidal self-injury("I hurt (pinched/cut/burned/hit) myself"). The results indicated that participants with high Neuroticism (M = 18.67, SD = 12.55) engaged in significantly more of the maladaptive emotion regulation strategies than participants with low Neuroticism (M = 9.23, SD = 6.16); t (47.22) = -3.85, $p < .001$. This demonstrates that while individuals with high and low Neuroticism made statistically the same number of attempts to regulate their emotions, for individuals with high Neuroticism,

more of those attempts were maladaptive strategies. To further the understanding of the use of maladaptive strategies, high and low Neuroticism individuals were compared on each of the seven maladaptive strategies using a series of independent sample *t*-tests. There were significant differences between high and low Neuroticism individuals on each of the maladaptive strategies except for rumination. Please see Table 3 and Figure 3 for these results.

Due to high Neuroticism individuals engaging in significantly more maladaptive strategies and reporting significantly more unsuccessful emotion regulation attempts, we examined whether there were differences between the high and low Neuroticism groups in terms of how successful the maladaptive emotion regulation attempts were using a series of independent samples *t*-tests. Results showed that the high Neuroticism group reported contextualizing, substance use, expressive suppression, emotional suppression, denial, and non-suicidal self-injury as significantly more successful at regulating their reported affect than their low Neuroticism counterparts. Please see Table 4 and Figure 4 for these results.

Hypothesis 4 predicted that participants with high Neuroticism would score higher on the DERS (Gratz & Roemer, 2004) than their low Neuroticism counterparts. The DERS scores for low and high Neuroticism participants were analyzed using an independent samples *t*-test. The high Neuroticism group ($M = 105.58$, $SD = 20.90$) scored significantly higher on the DERS than the low Neuroticism group ($M = 68.45$, $SD = 12.39$); $t\ (52.58) = -8.706$, $p < .001$. This shows, as hypothesized, that high Neuroticism individuals have greater self-reported difficulty regulating their emotions than individuals with low Neuroticism, according to this measure of emotion regulation.

Hypothesis 5 predicted that participants with high Neuroticism would score higher on the AIM (Larsen, 1984) than their low Neuroticism counterparts. This hypothesis was tested with an independent samples *t*-test. The hypothesis was supported; individuals with high Neuroticism (*M* = 3.87, *SD* = .49) reported significantly higher affect intensity than individuals with low Neuroticism (*M* = 3.57, *SD* = .38); *t* (59.89) = -2.75, *p* = .008. Additionally, the AIM was significantly, positively correlated with number of maladaptive strategies used; *r* (62) = .32, *p* = .01, suggesting that individuals with higher affect intensity use more maladaptive emotion regulation strategies.. Third, the AIM and DERS were significantly positively, correlated with each other; *r* (62) = .41, *p* = .001, suggesting that more intense experience of affect is associated with self-reported difficulties in managing affect. These findings demonstrate that individuals with high Neuroticism were experiencing emotions with greater levels of intensity than low Neuroticism individuals and this was related to their maladaptive strategy use.

Exploratory Analyses

In addition to the proposed analyses, we examined differences in use of adaptive emotion regulation strategies between high and low Neuroticism individuals. In addition to the significant differences in use of maladaptive strategies (with the exception of rumination), we found significant between-group differences on three of the adaptive strategies, consequences ("I thought about all the things in my life that this would impact"), self-blame ("I thought about how this situation was my fault"), and sleep ("I went to sleep"). Each of these strategies were shown to be engaged in significantly more by high Neuroticism participants than low Neuroticism participants. There were no significant differences on any of the other strategies assessed; see Table 3. Also, high and low Neuroticism groups were analyzed using paired-samples *t*-tests. We

found significant within-group differences on the maladaptive emotion regulation strategy, expressive suppression. Both groups reported a significant difference in the success of expressive suppression. The high Neuroticism group reported expressive suppression as unhelpful or unsuccessful (M = 2.36, SD = 2.60) at regulating their negative affect significantly more often than they reported it successful (M = .91, SD = 1.10); t (32) = -2.82, p = .008. The low Neuroticism group also reported expressive suppression as unsuccessful (M = 1.71, SD = 1.87) at regulating their negative affect significantly more often than they reported it successful (M = .39, SD = .62); t (30) = -3.94, p < .001.

Discussion

The results supported the majority of our hypotheses. While individuals with high Neuroticism made, on average, the same number of attempts to regulate their emotions as the participants with low Neuroticism, the high Neuroticism group reported their attempts as unsuccessful at regulating their emotions significantly more often than their low Neuroticism counterparts. However, it is important to note how close to significance (p = .06) high Neuroticism individuals were, on average, to making more overall attempts to regulate their emotions when compared to low Neuroticism individuals. Follow-up analyses suggest the number of unsuccessful emotion regulation attempts can be accounted for by number of overall emotion regulation attempts. These are still important findings because in a previous study (Bolger & Zuckerman, 1995), the high Neuroticism group reported their attempts at problem-solving or emotion regulation as ineffective or unsuccessful. Thus, the findings from the current study are significant, in part, because they provide further evidence that individuals with high Neuroticism have significant emotion regulation deficits (as evidenced by both trait-level self-

report as well as daily use reports) in addition to increased frequency, duration, and variability of negative affect.

One of the most intriguing findings of this study was that participants with high Neuroticism used significantly more maladaptive strategies when regulating their emotions than individuals with low Neuroticism. Also, although emotion regulation attempts on average were reported as unsuccessful significantly more often by participants with high Neuroticism, when looking specifically at attempts that utilized maladaptive strategies, individuals with high Neuroticism reported maladaptive strategies as successful significantly more often than participants with low Neuroticism. First, because individuals with high Neuroticism are choosing maladaptive strategies more often and consider them successful more often than they consider them unsuccessful, it can be inferred that the maladaptive strategy use is being maintained by the reduction of negative affect (i.e., negative reinforcement). Second, individuals with high Neuroticism were found to score significantly higher on the DERS (Gratz & Roemer, 2004) and the AIM (Larsen, 1984) than individuals with low Neuroticism and higher AIM scores were significantly positively correlated with greater maladaptive strategy use. These findings suggest high levels of affect intensity as an additional potential factor for greater engagement in maladaptive strategies by high Neuroticism individuals.

Further, when analyzing the high and low Neuroticism groups separately, expressive suppression was the only strategy that was reported as unsuccessful significantly more than it was reported as successful at regulating emotions by both groups. This is an important finding regarding the use of expressive suppression as an emotion regulation strategy because previous findings from Gross and John (2003) showed that participants who engaged in more expressive

suppression experienced and expressed fewer positive emotions and experienced more negative emotions than participants that used expressive suppression less frequently. Thus, our finding, in combination with Gross and John's (2003) findings, suggests expressive suppression is likely to be an ineffective emotion regulation strategy and related to experiencing further negative affect.

Limitations and Future Directions

There were some limitations to this study. One such limitation involved the set-up of the EMAs on the PDAs. After reporting their mood, each strategy (N = 20) was presented separately to the participants on a single screen. The participants could only report their use of a one strategy at a time before being asked to respond to the next strategy. This may have potentially overwhelmed participants. A possible revision to the EMAs for future studies would be to, after a participant reports their mood rating, to present a list of strategies on one screen of the PDA, instead of only being ask to report on one strategy at a time. This would allow a participant to report on several strategies they engaged in, all on one screen, and reduce the time it takes to complete an EMA. A second revision, to provide even more external validity, would be instead of being prompted by the PDA to fill out an assessment at random intervals, participants could record on the PDA at any time they had an emotional experience that they chose to regulate, without prompting. This could provide a stronger naturalistic context in which a participant's strategies are chosen. Also, it could provide greater accuracy in a participant's reporting of their mood, affective experiences, and chosen strategies because they could report at the time of their occurrence, instead of retrospectively.

Overall, this study provided insight into how a personality factor, Neuroticism, can affect the regulation of emotions, in terms of the number of attempts made, the specific strategies used,

and the success of each attempt. This work is significant because Neuroticism has an important place in clinical psychology with anxiety and depressive disorders being associated with high levels of Neuroticism (Bienvenu et al., 2004). One potential implication of this research within a therapeutic intervention framework is that individuals with high Neuroticism should be encouraged to use different, as opposed to more, emotion regulation strategies when distressed. Future research should examine the factors that maintain maladaptive strategy use in high Neuroticism individuals and how affect intensity is related to the utilization of maladaptive strategies.

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Table 1
Demographic Information

Item	N	Percentage
Male	36	56.2%
Female	28	43.8%
Ethnicity:		
Caucasian	53	83%
African American	3	5%
Hispanic American	4	6%
Indian American	1	1.5%
Asian	2	3%
Other	1	1.5%
Marital Status:		
Never Married	44	69%
Married	4	6%
Intimate Relationship (not living)	11	17%
Living with Partner	4	6%
Divorced	1	2%
Income:		
$0-$10,000	2	3%
$10,001-$20,000	7	11%
$20,001-$40,000	3	5%
$40,001-$65,000	15	23%
$65,001-$100,000	16	25%
$100,000 +	21	33%

Table 2
Summary of Scores

Measure	High N *M* (*SD*)	Low N *M* (*SD*)
NEO-Neuroticism	119.39 (16.13)	74.97 (15.44)
Difficulties in Emotion Regulation Scale	105.58 (20.90)	68.45 (12.39)
Affect Intensity Measure	3.87 (.49)	3.57 (.07)

Table 3.
Emotion Regulation Strategy Use

Strategy	High N *M* (*SD*)	Low N *M* (*SD*)	*p* value
Perspective	3.45 (3.07)	4.00(2.99)	.47
Reappraisal	2.76 (2.17)	2.42 (2.08)	.53
Acceptance	4.00 (2.40)	4.65 (3.37)	.38
Rumination	4.15 (3.21)	2.90 (2.60)	.09
Consequences	4.03 (3.52)	2.16 (2.28)	.01
Self-Blame	4.24 (3.99)	2.29 (2.41)	.02
Contextualizing	3.45 (3.75)	1.81 (1.54)	.03
Substance Use	2.03 (3.10)	.61 (.84)	.02
Sleep	2.48 (2.03)	1.42 (1.57)	.02
Exercise	1.79 (1.87)	.97 (1.52)	.06
Behavioral Activation	4.12 (3.40)	3.87 (3.00)	.76
Expressive Suppression	3.30 (2.68)	2.10 (2.10)	.05
Emotional Suppression	2.58 (2.85)	.81 (1.11)	.002
Other-Blame	2.58 (3.10)	2.00 (1.92)	.37
Positive Refocus	2.55 (2.73)	2.39 (2.54)	.81
Denial	2.00 (2.17)	.87 (1.15)	.01
Social Support	2.76 (2.37)	2.55 (2.29)	.72
Planning	3.61 (3.04)	3.65 (2.81)	.96
Benefit Finding	3.03 (2.53)	3.23 (3.15)	.79
Non-suicidal self-injury	1.15 (1.73)	.13 (.43)	.02

Table 4
Reported Success of Maladaptive Strategies

Strategy	High N *M* (*SD*)	Low N *M* (*SD*)	*p* value
Rumination	2.12 (2.06)	1.48 (1.91)	.20
Contextualizing	1.64 (1.78)	.87 (1.09)	.04
Substance Use	.79 (.96)	.29 (.59)	.02
Expressive Suppression	.91 (1.10)	.39 (.62)	.02
Emotional Suppression	.82 (1.01)	.29 (.64)	.02
Denial	.73 (1.04)	.19 (.40)	.01
Non-Suicidal Self-Injury	.55 (1.09)	.06 (.25)	.02

Figure 1. Total Emotion Regulation Attempts

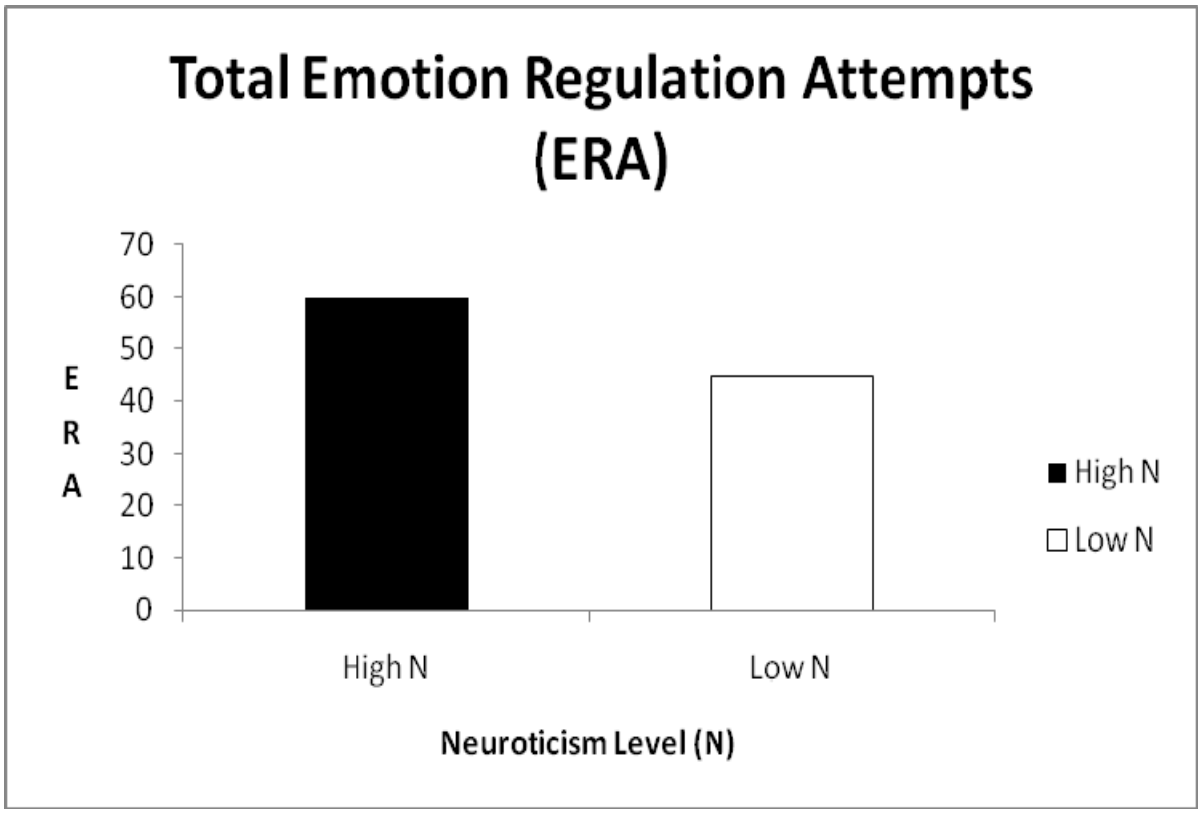


Figure 2. Unsuccessful Emotion Regulation Attempts

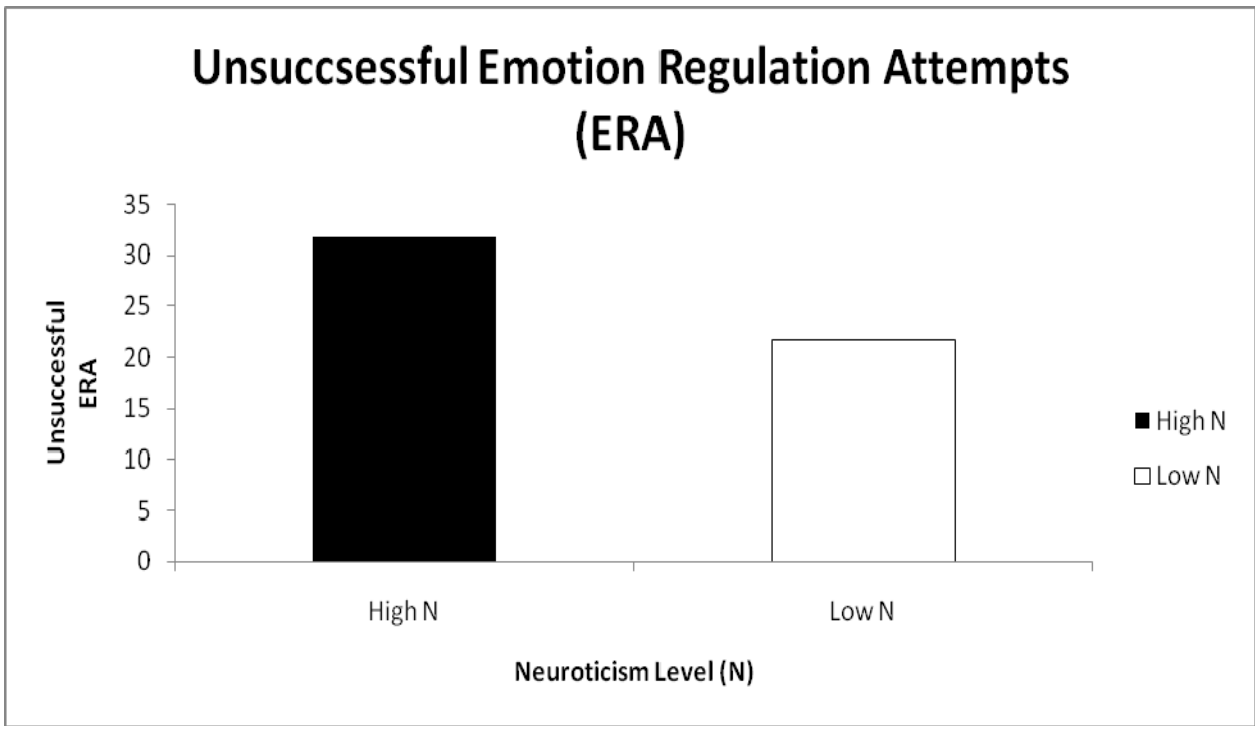


Figure 3. High and Low Neuroticism Total Maladaptive Strategy Use

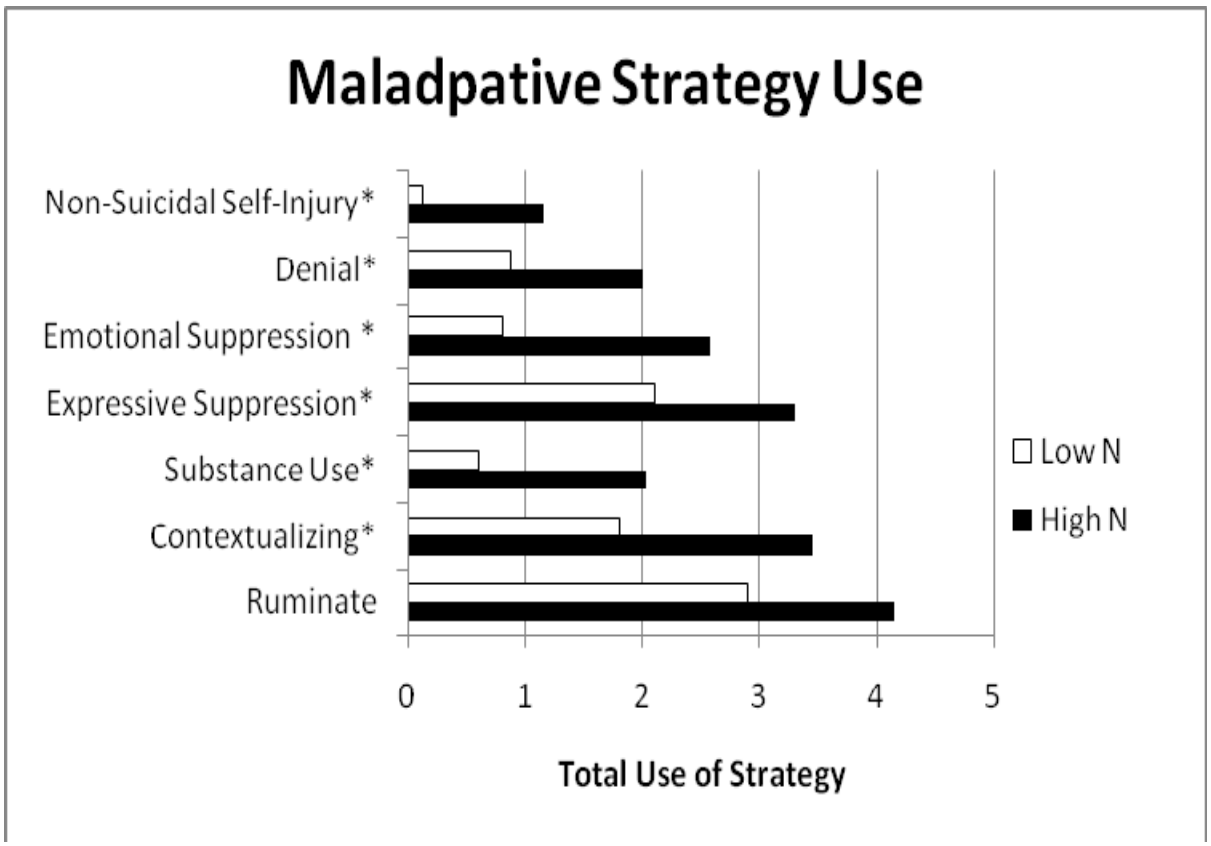
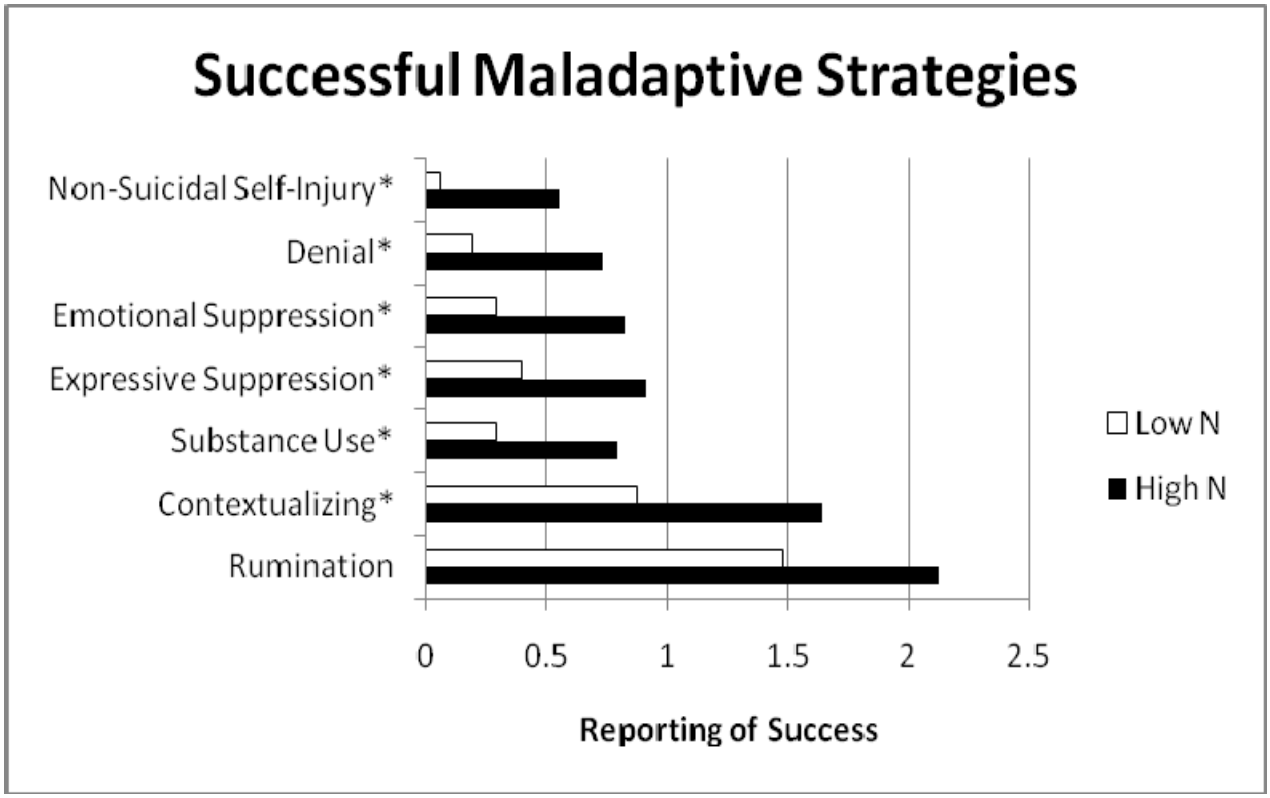


Figure 4. High and Low Neuroticism Reporting of Successful Maladaptive Emotion Regulation Strategies



Appendix A

The NEO-PI-R-Neuroticism Subscale

Please read each item carefully and circle the one answer that best corresponds to your agreement or disagreement. There are no right or wrong answers. Describe yourself honestly and state your opinions as accurately as possible.

SD = Strongly Disagree D = Disagree N = Neutral A = Agree SA = Strongly agree

1. I am not a worrier.

SD	D	N	A	SA

2. I often get angry at the way people treat me.

SD	D	N	A	SA

3. I rarely feel lonely or blue.

SD	D	N	A	SA

4. In dealing with other people, I always dread making a social blunder.

SD	D	N	A	SA

5. I rarely overindulge in anything.

SD	D	N	A	SA

6. I often feel helpless and want someone else to solve my problems.

SD	D	N	A	SA

7. I am easily frightened.

SD	D	N	A	SA

8. I'm an even-tempered person.

SD	D	N	A	SA

9. I rarely feel lonely or blue.

SD	D	N	A	SA

10. I seldom feel self-conscious when I'm around people.

SD	D	N	A	SA

11. I have trouble resisting my cravings.

SD	D	N	A	SA

12. I feel I am capable of coping with most of my problems.

SD	D	N	A	SA

13. I rarely feel fearful or anxious.

SD	D	N	A	SA

14. I am known as hot-blooded and quick-tempered.

SD	D	N	A	SA

15. I am seldom sad or depressed.

SD	D	N	A	SA

16. At times I have been so ashamed I just wanted to hide.

SD	D	N	A	SA

17. I have little difficulty resisting temptation.

SD	D	N	A	SA

18. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.

SD	D	N	A	SA

19. I often feel tense and jittery.

SD	D	N	A	SA

20. I am not considered a touchy or temperamental person.

SD	D	N	A	SA

21. I have sometimes experienced a deep sense of guilt or sinfulness.

SD	D	N	A	SA

22. It doesn't embarrassment me too much if people ridicule and tease me.

SD	D	N	A	SA

23. When I am having my favorite foods, I tend to eat too much.

SD	D	N	A	SA

24. I keep a cool head in emergencies.

SD	D	N	A	SA

25. I'm seldom apprehensive about the future.

SD	D	N	A	SA

26. I often get disgusted with people I have to deal with.

SD	D	N	A	SA

27. I tend to blame myself when anything goes wrong.

SD	D	N	A	SA

28. I often feel inferior to others.

SD	D	N	A	SA

29. I seldom give in to my impulses.

SD	D	N	A	SA

30. It's often hard for me to make up my mind.

SD	D	N	A	SA

31. I often worry about things that might go wrong.

SD	D	N	A	SA

32. It takes a lot to get me mad.

SD	D	N	A	SA

33. I have a low opinion of myself.

SD	D	N	A	SA

34. I feel comfortable in the presence of my bosses or other authorities.

SD	D	N	A	SA

35. I sometimes eat myself sick.

SD	D	N	A	SA

36. I can handle myself pretty well in a crisis.

SD	D	N	A	SA

37. I have fewer fears than most people.

SD	D	N	A	SA

38. At times I have felt bitter and resentful.

SD	D	N	A	SA

39. Sometimes things look pretty bleak and hopeless to me.

SD	D	N	A	SA

40. If I have said or done the wrong thing to someone, I can hardly bear to face them again.

SD	D	N	A	SA

41. Sometimes I do things on impulse that I later regret.

SD	D	N	A	SA

42. When everything seems to be going wrong, I can still make good decisions.

SD	D	N	A	SA

43. Frightening thoughts sometimes come into my head.

SD	D	N	A	SA

44. Even minor annoyances can be frustrating to me.

SD	D	N	A	SA

45. Too often, when things go wrong, I get discouraged and feel like giving up.

SD	D	N	A	SA

46. When people I know do foolish things, I get embarrassed for them.

SD	D	N	A	SA

47. I am always able to keep my feelings under control.

SD	D	N	A	SA

48. I’m pretty stable emotionally.

SD	D	N	A	SA

Appendix B

The Difficulties in Emotion Regulation Scale

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item:

1	2	3	4	5
almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)

_____ 1) I am clear about my feelings.

_____ 2) I pay attention to how I feel.

_____ 3) I experience my emotions as overwhelming and out of control.

_____ 4) I have no idea how I am feeling.

_____ 5) I have difficulty making sense out of my feelings.

_____ 6) I am attentive to my feelings.

_____ 7) I know exactly how I am feeling.

_____ 8) I care about what I am feeling.

_____ 9) I am confused about how I feel.

_____ 10) When I'm upset, I acknowledge my emotions.

_____ 11) When I'm upset, I become angry with myself for feeling that way.

_____ 12) When I'm upset, I become embarrassed for feeling that way.

_____ 13) When I'm upset, I have difficulty getting work done.

_____ 14) When I'm upset, I become out of control.

_____ 15) When I'm upset, I believe that I will remain that way for a long time.

_____ 16) When I'm upset, I believe that I'll end up feeling very depressed.

_____ 17) When I'm upset, I believe that my feelings are valid and important.

_____ 18) When I'm upset, I have difficulty focusing on other things.

_____ 19) When I'm upset, I feel out of control.

_____ 20) When I'm upset, I can still get things done.

_____ 21) When I'm upset, I feel ashamed with myself for feeling that way.

1	2	3	4	5
almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)

_____ 22) When I'm upset, I know that I can find a way to eventually feel better.

_____ 23) When I'm upset, I feel like I am weak.

_____ 24) When I'm upset, I feel like I can remain in control of my behaviors.

_____ 25) When I'm upset, I feel guilty for feeling that way.

_____ 26) When I'm upset, I have difficulty concentrating.

_____ 27) When I'm upset, I have difficulty controlling my behaviors.

_____ 28) When I'm upset, I believe that there is nothing I can do to make myself feel better.

_____ 29) When I'm upset, I become irritated with myself for feeling that way.

_____ 30) When I'm upset, I start to feel very bad about myself.

_____ 31) When I'm upset, I believe that wallowing in it is all I can do.

_____ 32) When I'm upset, I lose control over my behaviors.

_____ 33) When I'm upset, I have difficulty thinking about anything else.

_____ 34) When I'm upset, I take time to figure out what I'm really feeling.

_____ 35) When I'm upset, it takes me a long time to feel better.

_____ 36) When I'm upset, my emotions feel overwhelming.

Appendix C

The Affect Intensity Measure

DIRECTIONS: The following questions refer to the emotional reactions to typical life-events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how **YOU** react, ***not*** how you think others react or how you think a person should react.

NEVER	ALMOST NEVER	OCCASSIONLY	USUALLY	AMOST ALWAYS	ALWAYS
1	**2**	**3**	**4**	**5**	**6**

1. _____ When I accomplish something difficult I feel delighted or elated.
2. _____ When I feel happy, it is a strong type of exuberance.
3. _____ I enjoy being with other people very much.
4. _____ I feel pretty bad when I tell a lie.
5. _____ When I solve a small personal problem, I feel euphoric.
6. _____ My emotions tend to be more intense than those of most people.
7. _____ My happy moods are so strong that I feel like I'm "in heaven."
8. _____ I get overly enthusiastic.
9. _____ If I complete a task I thought was impossible, I am ecstatic.
10. _____ My heart races at the anticipation of some exciting event.
11. _____ Sad movies deeply touch me.
12. _____ When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused.
13. _____ When I talk in front of a group for the first time my voice gets shaky and my heart races.
14. _____ When something good happens, I am usually more jubilant than others.
15. _____ My friends might say I'm emotional.
16. _____ The memories I like the most are of those times when I felt content and peaceful rather than zestful and enthusiastic.
17. _____ The sight of someone who is hurt badly affects me strongly.

18. _____ When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.

19. _____ "Calm and cool" could easily describe me.

NEVER	ALMOST NEVER	OCCASSIONALY	USUALLY	AMOST ALWAYS	ALWAYS
1	**2**	**3**	**4**	**5**	**6**

20. _____ When I'm happy, I feel like I'm bursting with joy.

21. _____ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

22. _____ When I'm happy I feel very energetic.

23. _____ When I receive an award I become overjoyed.

24. _____ When I succeed at something, my reaction is calm contentment.

25. _____ When I do something wrong I have strong feelings of shame and guilt.

26. _____ I can remain calm even on the most trying days.

27. _____ When things are going good I feel "on top of the world."

28. _____ When I get angry it's easy for me to still be rational and not overreact.

29. _____ When I know I have done something very well, I feel relaxed and content rather than excited and elated.

30. _____ When I do feel anxiety it is normally very strong.

31. _____ My negative moods are mild in intensity.

32. _____ When I am excited over something I want to share my feelings with everyone.

33. _____ When I feel happiness, it is a quiet type of contentment.

34. _____ My friends would probably say I'm a tense or "high-strung" person.

35. _____ When I'm happy I bubble over with energy.

36. _____ When I feel guilty, this emotion is quite strong.

37. _____ I would characterize my happy moods as closer to contentment than to joy.

38. _____ When someone compliments me, I get so happy I could “burst.”

39. _____ When I am nervous I get shaky all over.

40. _____ When I am happy the feeling is more like contentment and inner calm than one of exhilaration and excitement.

Appendix E

Subject Number_____

DEMOGRAPHIC DATA FORM

Date:_____

1. Sex:

Male ____ Female ____

2. Age:

_____ years

3. Current marital status: *(check all that apply)*

____ married with spouse
____ living with partner
____ separated
____ divorced
____ widowed
____ in an intimate relationship but not living together
____ never married

4. Year in school:

____ Freshman
____ Sophomore
____ Junior
____ Senior

5. Ethnicity:

____ Caucasian
____ African American
____ American Indian
____ Asian
____ Hispanic-American
____ Other

6. Estimated Family Income:

____ 0 - $10,000
____ $10,001 - $20,000
____ $20,001 - $40,000
____ $40,001 - $65,000
____ $65,001 - $100,000
____ more than $100,000

Appendix F

Contact Information

Particpant Number:_____

Particpant Name:_____

Phone Number:_____

Email:_____

PDA serial number:_____

PDA check-out date:_____

PDA return appointment date:_____time:_____

I, _____, authorize the study personnel to contact me by phone or email in regards to my use of the PDA as well as my study appointments.

Signature_____ Date_____

Appendix G

PDA Instructions

- ☞ You will answer a total of 30 surveys over 10 days (3 surveys each day)
- ☞ Begin answering surveys today (date: _____)
- ☞ You are scheduled to return the PDA on the following date to room 181 in the Psychology Building at 1835 Neil Avenue.
  date:_____ time:_____

To start a survey, tap the screen

- ☞ Answer questions by tapping the appropriate response at the bottom of the screen
- ☞ Continue answering questions until you reach the screen that reads "Questionnaire completed. Thank you."
- ☞ Be sure to keep the Palm Pilot with you at all times so that you hear the alarm

Support and Troubleshooting

If at any time during your participation you have questions or problems with the procedure, PDA, or anything else related to the experiment, you have a variety of options at your disposal. First, we recommend you check the FAQ (frequently asked questions) section listed below. If your question or concern is not addressed there, you should contact the research coordinator, Jane Heiy, at (618) 514-6060 or heiy.jane@gmail.com.

Frequently Asked Questions (FAQ)

Q: My PDA seems to be frozen. What do I do?

A: If you are sure that PDA is frozen and is not simply sleeping between signals, then you can do a "soft-reset." This involves turning the PDA over and pressing the head of the stylus into the button on the back for a couple of seconds. This should restart the PDA and the experiment should restart automatically. If this does not resolve the problem, please contact the research coordinator as quickly as possible.

Q: *How often and when will the Palm signal?*

A: The palm will signal you every four hours three times a day. These signals will take place at approximately 1pm, 4pm, and 8pm. The signals will take place for ten consecutive days beginning the day after you receive the PDA.

Q: *I can't turn my Palm on – what should I do?*

A: Your Palm will turn on by itself when a session is to begin. Otherwise, all other functions have been locked, so that the Palm can only be used to complete sessions. This is to preserve battery life and protect the information given in response to the questionnaires.

Q: *I'm worried that my battery might be getting low – how do I recharge it?*

A: The palms will be fully charged before you begin your participation, and the battery should remain charged for several days. However, you have been given a charger to use anytime you receive a message indicating a low battery on the PDA.

Q: *Will I be penalized for missing a session?*

A: You should make every effort to complete the sessions as they arise. This being said, we understand that there are some situations where it is impossible to complete a session (e.g.,

during class, when you are driving, while bathing, etc.). If you can access your Palm when it beeps, but you are unable to complete a session, you can wait for up to 60 minutes. If you do not respond in that amount of time, the session will terminate automatically and it will not be counted as a completed session.

Q: *What if I have to stop in the middle of a session and can't finish it?*

A: Most of the reports will only take a few minutes to get completely finished. If you are coming up on a deadline, such as the beginning of a class, try to get as far as you can - you might be able to finish. If you are unable to complete a report you have started, the session will time out after 5 minutes of inactivity. However, if you believe you will be able to get back to the report in a short amount of time, check to see if it is still active, because the time might not have passed.

Q: *I haven't been beeped in several hours - is my PDA broken?*

A: If it has been more than a 5 hours since the Palm initiated a session, and you are confident you didn't miss a session, contact our lab via phone or email ASAP for a researcher to look at it. It might be a dead battery, or it might be a faulty function of the program.

Q: *My Palm beeped loudly during class- how do I make it shut up quickly if I need to?*

A: You can make the PDA silent by tapping the screen once (even using your fingernail will work). What this does is begin the session, so if you are in a situation where you cannot complete a session right then, it will either time out, or you can see if it is still going when you're finished with the conflict and complete it then.

Q: *These questions keep asking me to report on my emotions. What if I'm just not experiencing much?*

A: It is not "wrong" to have not experienced much emotion between PDA signals. Simply answer the questions the best that you can given what you are currently feeling and experiencing.

Q: *How do I use the type in the number for the first question again?*

A: You respond to these items by either tapping the stylus on the 123 symbol in the lower right corner of the screen and then selecting the numbers from the keyboard or writing the numbers with the stylus in the box just above the 123 symbol. If you make an error entering the numbers simply draw a horizontal line from right to left to delete the incorrect character.

Q: *The first question will not allow me to enter a number for my answer. What is going on?*

A: Most likely the cursor got moved off of the entry line. Simply take your stylus and tap on the beginning of the first answer line. A cursor should appear and then you are ready to enter your response number as usual. If this does not fix the problem, please call the experiment coordinator for assistance.

If you have any questions or problems with PDA, please immediately contact the experiment coordinator, Jane Heiy, at (618) 514-6060 or heiy.jane@gmail.com.

Appendix H

PDA Survey

Hello Participant,

Please rate your mood right now on a scale from 0 to 100 with 0 representing the worst you have ever felt and 100 representing the best you have ever felt. _____

In the past four hours, have you experienced any unpleasant emotions?

If yes, which one?

- Anger
- Anxiety/Fear
- Embarrassment/Shame
- Guilt
- Disgust
- Sadness
- Loneliness

Did something specific trigger these feelings?

If yes, which of the following was primarily involved?

- Friends/ Family/ Partner
- Academic/ Employment
- Other

Did you do any of these things to lessen or decrease the intensity of that emotion(s)?

1. I told myself that things could be worse.
   - -No
   - -Yes, but it did not change the intensity of the emotion.
   - -Yes, and it did change the intensity of the emotion.
2. I found a friend or family member to talk to.
   - -No
   - -Yes, but it did not change the intensity of the emotion.
   - -Yes, and it did change the intensity of the emotion.
3. I thought about the situation in a different way.
   - -No
   - -Yes, but it did not change the intensity of the emotion.
   - -Yes, and it did change the intensity of the emotion.
4. I made a plan to make the situation better.
   - -No
   - -Yes, but it did not change the intensity of the emotion.
   - -Yes, and it did change the intensity of the emotion.

5. I thought about how I could become stronger or learn from this situation.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
6. I accepted the situation and/ or my emotions.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
7. I thought over and over again about the situation and my feelings.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
8. I thought about all the different things in my life that this situation would impact.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
9. I thought about how this situation was my fault.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
10. I thought about all the other things that have happened to me in addition to this.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
11. I smoked a cigarette/ drank alcohol/ got high.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
12. I hurt (pinched/cut/burned/hit) myself.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
13. I went to sleep.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
14. I exercised.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
15. I found an activity to keep myself busy and distracted.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

16. I controlled my emotions by not showing them.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
17. I ignored my feelings.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
18. I thought about how the situation was someone else's fault.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
19. I thought of something pleasant instead of what had happened.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
20. I just acted like the situation had never happened at all.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

In the past four hours, have you experienced any pleasant emotions?
    If yes, which one?
        Joy
        Excitement
        Pride
        Love
        Amusement
        Interest
        Surprise

Did something specific trigger these feelings?
    If yes, which of the following was primarily involved?
        Friends/ Family/ Partner
        Academic/ Employment
        Other

Did you do any of these things to increase or decrease the intensity of that emotion(s)?

1. I thought about how the situation was not really that great.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

2. I talked to my friends and family.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

3. I thought about the situation in a different way.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
4. I made a plan to make the good situation happen again.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
5. I concentrated on upcoming positive events in my life.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
6. I tried to revel in the moment and concentrate on how good I felt.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
7. I replayed all the details of the event in my head to keep reliving the good feelings.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
8. I thought about all the things in my life that this would impact.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
9. I thought about everything that I had done to make this positive situation happen.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
10. I thought about all the other good things that were happening in my life as well.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
11. I smoked a cigarette/ drank a drink/ got high.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
12. I treated myself to something special.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

13. I avoided all negative thoughts and stressors.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
14. I listened to upbeat music or watched a happy movie or television show.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
15. I sought out activities and socializing.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
16. I controlled my emotions by not showing them
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
17. I emphasized my emotions by showing them.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
18. I thought about how someone else was really responsible for this good situation.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
19. I reminisced about pleasant memories.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.
20. I just acted like the situation had never happened.
    -No
    -Yes, but it did not change the intensity of the emotion.
    -Yes, and it did change the intensity of the emotion.

Appendix I

Newspaper Advertisement

Appendix J

Phone Interview Script

- Write down name and phone number of caller.

- Find out from caller how they found out about our study.

- Ask the caller if it's okay that I ask a few pre-screening questions to see if they might be eligible to complete the first stage of our study.

- Would you consider yourself an even-tempered person?

Qualifying Answer(s): No, sometimes I get angry, sometimes I loose my temper (ask for examples).

- Would you consider yourself a touchy or temperamental person?

Qualifying Answer(s): Yes, sometimes I am sensitive, my mood does fluctuate (ask for examples).

- Do you often feel tense?

Qualifying Answer(s): Yes, I do feel anxious, I feel stressed often (ask for examples).

- Do you worry often about things that might go wrong?

Qualifying Answer(s): Yes, my friends say I worry a lot, I do worry about important things (ask for examples).

- Can you easily resist temptations or cravings?

Qualifying Answer(s): No, I don't like to hold myself back from things/foods I want, it is hard for me to resist a craving (ask for examples).

- Do often feel helpless?

Qualifying Answer(s): Yes, sometimes I wish I had help solving issues in my life, stress really makes me fall apart (ask for examples).

- Are you easily frightened?

Qualifying Answer(s): Yes, I do not like to feel scared, I do not like to watch scary movies, and my friends say I am jumpy (ask for examples).

- What are some hobbies you have?

Qualifying Answer(s): Hobbies that suggest solitude and spending a large amount of time alone, without social involvement. Also, look for impulsive behaviors here.

- Do you feel lonely or blue often?

Qualifying Answer(s): Yes, I feel down sometimes, sometimes I feel lonely (ask for examples).

- Do you get your feelings hurt often? Would you say you have a tendency to be sensitive?

Qualifying Answer(s): Yes, I am told by my family I am sensitive, most people are too mean (ask for examples).

Appendix K

Debriefing Form

Thank you for taking your time to complete our study. It is essential to the research process that people, such as yourself, are committed to the continuation of research and the advancement of knowledge in the field of psychology.

Now that the study is complete, we would like to take this opportunity to describe the study to you in further detail. In this study we hypothesized that those who used a larger variety of emotion regulation strategies on a daily basis would be more able to maintain a positive mood. With the emotion regulation reports that you gave on the PDA, we will compare your flexibility in use to your reported mood. We are particularly interested in looking at the association between the variety of emotion regulation strategies used and the reported mood.

Although there is no direct benefit to you, we hope that the data from this experiment will not only add depth the literature on this topic, but also enhance the lives of people with psychological disorders, such as depression, by providing them with effective strategies to manage their emotions.

Sometimes answering questions can lead to distress or can bring attention to symptoms that have been present for some time. If you think that you may be experiencing psychological distress of any kind, please do not hesitate to contact one of the services listed below:

Psychological Services Center
105 Psychology Building
1835 Neil Avenue
612-292-2059

Younkin Success Center (4th Floor)
1640 Neil Avenue (Just South of 11th Avenue)
Phone: 614-292-5766
http://www.ccs.osu.edu/

Unfortunately, individual results will not be available because we are only looking at the data in groups, but if you have any remaining questions or concerns, or if you feel that you have suffered any distress due to this experiment, please contact Jane Heiy by e-mail at heiy.jane@gmail.com or Dr. Jennifer Cheavens at Cheavens.1@osu.edu or 614-247-6733.

Again, thank you for your participation in this experiment.